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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,323	02/09/2004	Kazuki Matsumoto	248672US2SRD	5497

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ALEXANDRIA, VA 22314

EXAMINER

BIBBINS, LATANYA

ART UNIT	PAPER NUMBER
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2627

NOTIFICATION DATE	DELIVERY MODE
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05/02/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/773,323

Applicant(s)

MATSUMOTO ET AL.

Examiner

LaTanya Bibbins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) 12 and 20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-11 and 13-19 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. In the remarks filed on January 29, 2007, Applicant amended claims 9, 11, 13, and 14, cancelled claims 12 and 20, and submitted arguments for allowability of pending claims 1-11 and 13-19.

Response to Arguments

2. Applicant's arguments filed January 29, 2007 have been fully considered but they are not persuasive.

In regard to claims 1-8, Applicant argues that the cited Kuroda and Horimai references are directed to different technologies with different recording and playback characteristics and that minimizing cross-talk between neighboring tracks of a series of information pits and between neighboring information pits cannot motivate the artisan to combine the masking layer of Kuroda with the holographic recording medium of Horimai.

However, both Kuroda and Horimai are drawn to optical recording mediums used for high-density recording (Kuroda column 1 lines 8-12 and Horimai column 1 lines 11-14 and 36-38). Kuroda discusses the relationship between the light intensity and the transmittance (as shown in Figure 1 and column 1 lines 44-60) and the effect of the masking layer when a laser beam spot is irradiated on a track (column 1 lines 61-67, column 2 lines 1-40, and Figures 2 and 3). Horimai also suggests variable transmittance materials where the optical characteristics such as reflectance (which is inversely proportional to transmittance) vary depending on the light intensity (column 11

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lines 50-55) and focusing a laser beam that is irradiated on a track, as shown in Figure 6.

Therefore, as indicated in the office action, one of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to "minimize cross-talks between neighboring tracks of a series of information pits and between neighboring information pits by providing the variable transmittance material layer."

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (US Patent 7,002,891 B2) and further in view of Kuroda. (US Patent 5,576,084).**

Regarding claim 1, Horimai discloses a holographic recording medium (Figure 1, element 1) comprising: a recording layer in which information is to be holographically recorded (see the information recording layer in column 11 lines 50-52 and Figure 1 element 3). Horimai fails to disclose that the light-shielding layer faces a main surface of the recording layer and whose transmittance for a recording light is increased on increasing intensity of the recording light. Kuroda, on the other hand, teaches a light-

shielding layer which faces a main surface of the recording layer and whose transmittance for a recording light is increased on increasing intensity of the recording light (see the masking layer in column 1 lines 45-55 and Figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the masking layer of Kuroda with the holographic recording medium of Horimai. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to "minimize cross-talks between neighboring tracks of a series of information pits and between neighboring information pits by providing the variable transmittance material layer" (Kuroda column 2 lines 19-23).

Regarding claim 2, Kuroda teaches the medium wherein the light-shielding layer (or masking layer in Figure 8 element 102) exhibits bleaching property when intensity of the recording light is increased (column 7 lines 26-39).

Regarding claim 3, Kuroda teaches the medium wherein the light-shielding layer contains a transparent material and a dye dissolved or dispersed in the transparent material and exhibiting saturable absorption (column 2 lines 48-52).

Regarding claim 6, Horimai discloses the medium further comprising a substrate which supports the recording layer (Figure 1 element 4) but fails to teach a light-shielding layer with the recording layer interposed between the substrate and the light-shielding layer. Kuroda, however, teaches a light-shielding layer (see the masking layer in column 1 lines 45-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the masking layer of Kuroda above the recording layer in the holographic recording medium of Horimai. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to "minimize cross-talks between neighboring tracks of a series of information pits and between neighboring information pits by providing the variable transmittance material layer" (Kuroda column 2 lines 19-23).

Regarding claim 7, Kuroda discloses the medium further comprising a reflecting layer (Figure 4B element 6) which is disposed on a side of the recording layer opposite to the light-shielding layer (see column 5 lines 59-64 and Figure 4B).

Regarding claim 8, Horimai discloses the medium further comprising a substrate between the recording layer and the reflecting layer (column 11 lines 45 and 46 and Figure 1 element 4).

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (US Patent 7,002,891 B2) and Kuroda. (US Patent 5,576,084) as applied to claims 1 and 9 above, and further in view of Tsukamoto (US Patent 7,042,824 B2).

Regarding claim 4, Horimai and Kuroda disclose the medium according to claims 1, but fail to disclose that the recording layer contains organic material. Tsukamoto, on the other hand, teaches a recording medium using holograph (column 1 lines 31-33) where the recording layer contains organic material (column 3 lines 46-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the organic recording layer of Tsukamoto into the holographic recording medium of Horimai and Kuroda. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings because organic materials are typically used in recording layers, necessary to implement holographic storage media.

Regarding claim 5, Horimai and Kuroda disclose the medium according to claims 1, but fail to disclose that the recording layer contains inorganic material. Tsukamoto, on the other hand, teaches a recording medium using holograph (column 1 lines 31-33) where the recording layer contains inorganic material (column 12 lines 66 and 67 and column 13 lines 1 and 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the inorganic recording layer of Tsukamoto into the holographic recording medium of Horimai and Kuroda. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings because inorganic materials are typically used in recording layers, necessary to implement holographic storage media.

Allowable Subject Matter

6. Claims 9-11, and 13-19 are allowed.
7. The following is an examiner's statement of reasons for allowance:

Regarding claims 9-11 and 13-19, none of the references of record, alone or in combination, suggest or fairly teach the limitations of independent claim 9 in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to disclose a holographic recording medium comprising: a recording layer in which information is to be holographically recorded; and a light-shielding layer which faces a main surface of the recording layer and selectively transmits a recording light, wherein a **ratio of a first average transmittance to a second average transmittance is 15 or larger, the first average transmittance being an average transmittance of the light-shielding layer within a wavelength range of $\lambda_{\text{rec}}-10$ nm to $\lambda_{\text{rec}}+10$ nm where λ_{rec} representing a wavelength of the recording light, and the second average transmittance being an average transmittance of the light-shielding layer within a wavelength range of 300 nm to 600 nm.**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LaTanya Bibbins



WAYNE YOUNG
SUPERVISORY PATENT EXAMINER